REMARKS

Review and reconsideration on the merits are requested.

Applicants cancel "product" claims 6, 7, 10 and 16-18 so that only method claims 1-5 and 11-15 remain active.

With the cancellation of claims 6, 7, 10 and 16-18, the following rejections become moot (with reference to the Paragraphs of the Examiner in the Action of July 21, 2003):

The obviousness-type double patenting rejection of Paragraph 6.

The "not patentably distinct" rejection of Paragraph 7.

The anticipation rejection of Paragraph 11.

The anticipation rejection of Paragraph 12.

The 35 U.S.C. § 102(f) rejection of Paragraph 13.

This would leave, however, the following rejections active:

The rejection of claims 11-15 under 35 U.S.C. § 103(a) as being unpatentable over Manning et al ('460) in view of Endo (JP '823A) and Jha et al ('923). These references will be referred to as Manning, Endo and Jha, noting that the Examiner has provided an English language translation of Endo.

The rejection of claims 1-5 and 11-15 under 35 U.S.C. § 103(a) as being unpatentable over Nakaoka et a (EP '874A2)[1] in view of Jha. The Examiner has provided an English language translation of Endo.

[1] Since U.S. Patent 6,001,194 corresponds to EP 0875,874, Applicants treat the same as with interchangeable insofar as their comments are concerned.

The above rejections are respectfully traversed. The Examiner's position is set forth in the Action in some detail and will not be repeated here except as necessary to an understanding of Applicants' traversal which is now presented.

Turning first to the rejection of Paragraph 14 of the Action, neither Manning nor Endo disclose a multi-layer body consisting of layers A and layers B which are stacked on each other in the sense of the present invention. Phrased somewhat differently, the materials disclosed in Manning and Endo are not stacked, and thus have structures which are quite different from those of the present invention. Further, Manning does not even disclose a semi-hard magnetic material, rather, just discloses a magnetic material from the Fe-Mn system. Accordingly, Applicants believe it quite clear that even Manning in view of Endo, viewing this combination alone, would provide no motivation to one of ordinary skill in the art to reach the method of producing a semi-hard magnetic material as claimed herein, and certainly would provide no motivation to reach the semi-hard magnetic material of the present invention.

However, the rejection is further in view of Jha, and Applicants now address Jha.

Jha discloses that an electronic circuit board material may have a multi-layer structure and that the Invar layers of the Jha multi-layer structure can be broken up by force under pressure caused by rolling. Directly contrary to this aspect of Jha, the layers B of the present invention each containing a non-magnetic Cu group metal as the main component are divided (or segmented) by heating. Thus, referring to the top of page 10 of the instant Action, Applicants believe it quite clear that the Jha teaching that "when these materials are hot or cold rolled, one

of the metals will be distributed in the other" is at best what might be considered removal by force under pressure caused by rolling, not a divided or segmenting by heating.

Further, according to Jha, a preferred embodiment involves a multi-layer structure which includes a Cu layer and an Invar layer (an Fe-Ni type of alloy). If one were to heat a multi-layer structure as taught in Jha, the layers would dissolve in each other and be alloyed with each other due to the presence of the Ni. Thus, there would be no dividing (or segmenting) in the sense of the present invention. In this regard, the Examiner is requested to note that an objective in Jha is to maintain the Cu layer and the Invar layer separately so as to simultaneously achieve both high heat conductivity and low thermal expansion for the electronic circuit board. Given this teaching in Jha, Applicants respectfully submit that one of ordinary skill in the art would in no fashion be motivated to heat the Cu-Invar layer body of Jha such that the structure thereof would be changed.

In fact, referring to Jha at col. 4, line 56 to col. 5, line 10, Jha discloses (the total material from Jha contains additional disclosure, but this appears most relevant):

> "Where the first and second metals would tend to diffuse with each other at elevated temperatures....the pressure rolling reductions in thickness are carried out cold in the present process so that the metallurgical bonds between the metal layers in the composite multilayer materials are formed in the solid phase to maintain the first and second metals substantially free of diffusion such as might lower the thermal conductivity properties of the first metal.
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> If desired, the composite material is subjected to heat treatment to improve bonding and processability of the composite, the heat treatment being selected and controlled to avoid diffusion, etc., such as might reduce thermal conductivity as noted above".

(Underscoring has been added to the above quotations).

The above concepts in Jha are seemingly apparently quite different from those of the present invention.

Further, there is a difference in the metallographic structures of Jha and the present invention.

As discussed above, Jha has the combined objects of achieving both low thermal expansion and high heat conduction. Especially to achieve high heat conduction, in the claims (e.g., end of claim 6, etc.), Jha states that:

> "a composite material is formed so as to have portions of the iron alloy metal material distributed in a matrix of the copper metal material extending in continuous phase along three mutually perpendicular axes."

Applicants submit that Jha makes such a statement because Jha requires a metallographic structure where the Invar materials are broken up by pressure rolling and distributed in the Cu matrix by force.

In the case of using the metallographic structure of Jha in a circuit board which is to show high heat conduction, heat will be dissipated in three directions, namely, in the length, breadth and height directions. To achieve this desired result, however, quite clearly, it would be necessary that the Cu material continuously extend while connected. In distinction, according to the present invention, the layer to be divided (or segmented) is not the Fi-Ni layer, but the Cu layer. As a consequence, the Cu material in accordance with the present invention does not form a matrix structure as required in Jha.

Thus, Applicants submit it is quite clear that Jha and the invention in Jha is based on a different metallographic structure and method from those of the present invention.

With respect to the rejection of Paragraph 15 of the Action, namely over Nakaoka in view of Jha, in Nakaoka, the techniques disclosed relate to making Fe and Cu into a bias material for a magnetic marker. In Nakaoka, this involves producing the material by a casting method or producing the material by a powder method. There is, however, no disclosure in Nakaoka regarding superposition of an Fe metal plate and a Cu metal plate. Thus, Nakaoka is involved with techniques which are quite dissimilar from the present invention.

Applicants believe it also appropriate to overview the combination of references. The Examiner in the Action indicates that Jha discloses a multilayer technique which is not disclosed in Nakaoka. However, Applicants believe that Nakaoka and Jha involve dissimilar technical problems and, for this reason, there is no motivation for one of ordinary skill in the art to combine essentially different techniques (Nakaoka and Jha), especially considering Nakaoka in no fashion discloses dividing stacked Cu layers, rather, is directed to a casting method and a powder method.

On the other hand, Jha has the intention to divide stacked layers, but clearly Cu is not divided. If Cu were to be divided, the high heat conduction desired in Jha as an essential object could not be achieved.

Further, as earlier discussed, Jha discloses that the layers in Jha are divided by breaking up layers in a uniform fashion upon rolling, rather than by a heat treatment. As earlier stated,

quite clearly Jha teaches that a heat treatment should be avoided since this would lead to the undesired diffusion in Jha.

Applicants thus respectfully submit that one of ordinary skill in the art would not be motivated to combine Nakaoka with Jha, because there is no common technical ground between these two references.

While the Examiner also refers to the conditions of "heat treatment for improving steepness" being disclosed in Nakaoka, in accordance with the present invention, the heat treatment to improve steepness is performed in addition to the dividing treatment, i.e., in accordance with the present invention, the dividing treatment is performed to divide (or segment) the Cu layers by heating, because the Cu layers are stacked in a multi-layer state.

For all the reasons above, Applicant submit that claims 11-15 are unobvious over Manning, in view of Endo and Jha, and that claims 1-5 and 11-15 are unobvious over Nakaoka in view of Jha.

Withdrawal of the rejection is requested.

Respectfully submitted,

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